

Descriptions

This 100V,59A N-Channel MOSFET in a TO-252 Plastic Package.

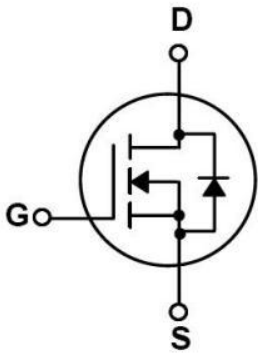
Features

- Low On-Resistance,
- Fast switching.
- Halogen-free Product.

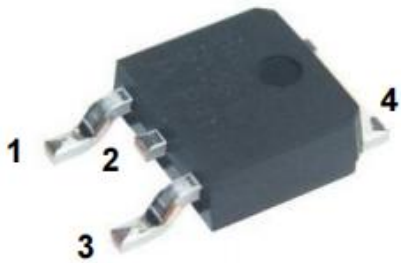
Applications

These devices are well suited for high efficiency switching DC/DC converters and switch mode power supplies.

Equivalent Circuit



Pinning



PIN1: Gate PIN 2: Drain PIN 3: Source PIN 4: Drain

Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Drain Current	$I_D(T_C=25^\circ\text{C})$	59	A
Pulsed Drain Current	I_{DM}	240	A
Gate-Source Voltage	V_{GS}	± 20	V
Avalanche Current	I_{AR}	15	A
Single Pulsed Avalanche Energy	E_{AS}	170	mJ
Total Power Dissipation	$P_D(T_C=25^\circ\text{C})$	73	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$
Junction-to-Ambient	$t \leq 10\text{s}$	20	$^\circ\text{C/W}$
Junction-to-Ambient	Steady-State		
Junction-to-Case	Steady-State	1.7	

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}$ $I_D=250\mu\text{A}$	100	102		V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100\text{V}$ $V_{GS}=0\text{V}$			1	μA
		$V_{DS}=100\text{V}$ $V_{GS}=0\text{V}$ $T_J=125^\circ\text{C}$			5	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu\text{A}$	1.0	1.5	3.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}$ $I_D=35\text{A}$		17.5	20	m Ω
	$R_{DS(on)}$	$V_{GS}=4.5\text{V}$ $I_D=20\text{A}$		20	25	m Ω
Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}$ $I_S=35\text{A}$ $T_J=25^\circ\text{C}$			1.2	V

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		4780		pF
Output Capacitance	C_{oss}			110		
Reverse Transfer Capacitance	C_{rss}			140		
Gate resistance	R_g	$V_{GS}=0V, V_{DS}=0V,$ $f=1MHz$		1		Ω
Total Gate Charge	$Q_{g(10V)}$	$V_{GS}=10V, V_{DS}=50V,$ $I_D=20A$		16		nC
Gate Source Charge	Q_{gs}			5		
Gate Drain Charge	Q_{gd}			3		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=50V$ $R_L=2.5\Omega$ $R_{GEN}=3\Omega$		7.5		ns
Turn-On Rise Time	t_r			2.5		
Turn-Off Delay Time	$t_{d(off)}$			16.5		
Turn-Off Fall Time	t_f			3		

Electrical Characteristic Curve

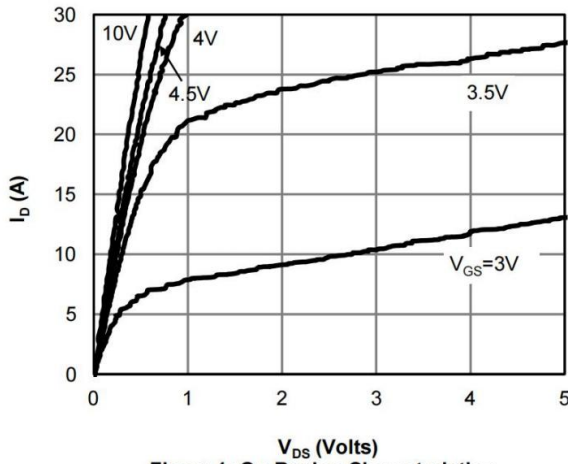


Figure 1: On-Region Characteristics

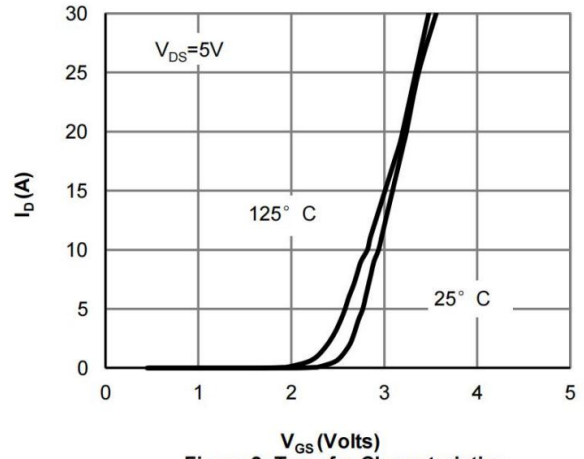


Figure 2: Transfer Characteristics

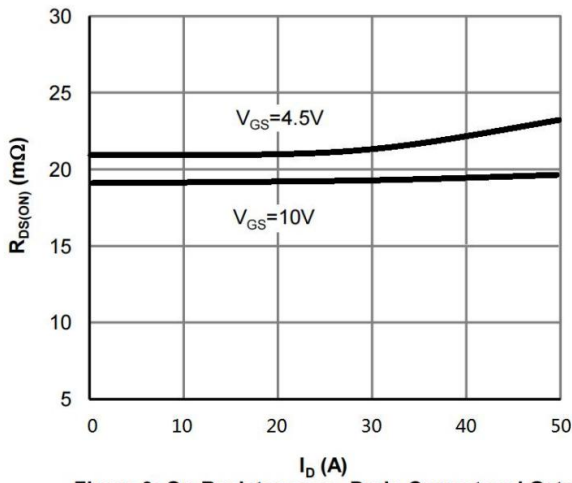


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

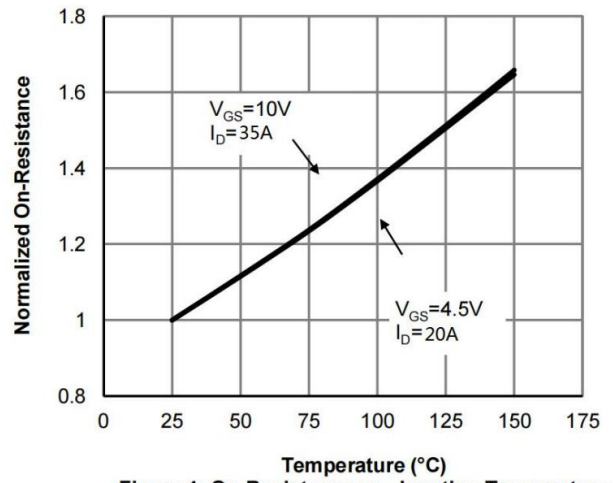


Figure 4: On-Resistance vs. Junction Temperature

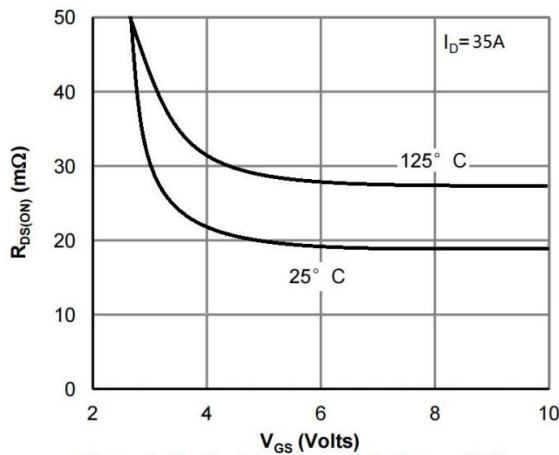


Figure 5: On-Resistance vs. Gate-Source Voltage

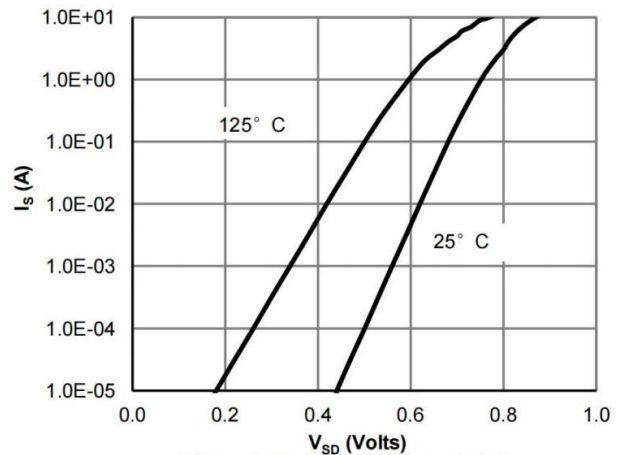


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve

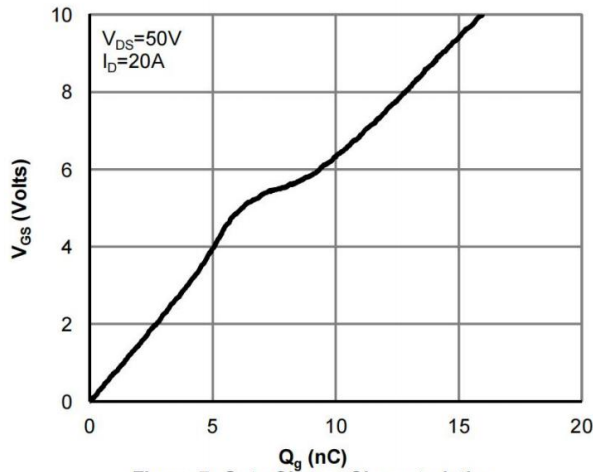


Figure 7: Gate-Charge Characteristics

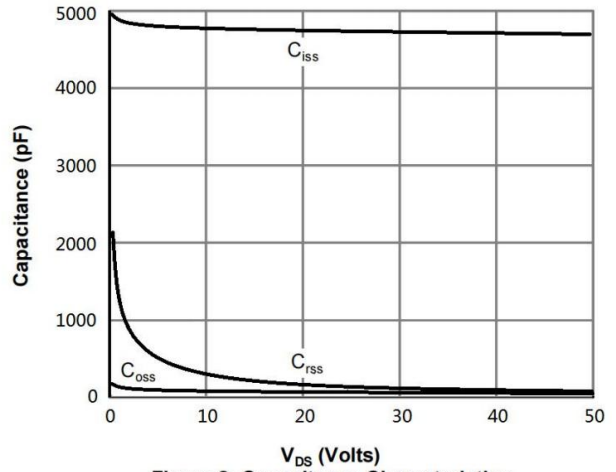


Figure 8: Capacitance Characteristics

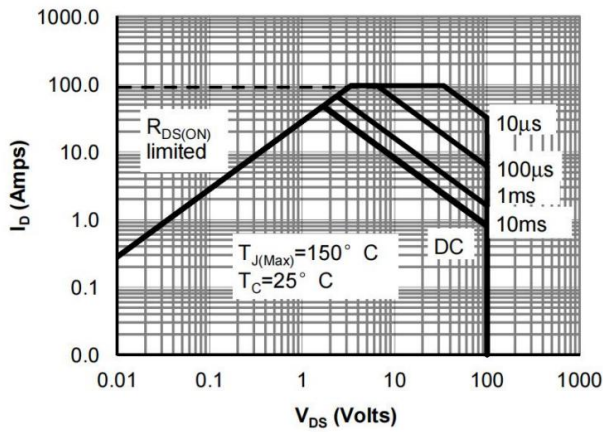


Figure 9: Maximum Forward Biased Safe Operating Area

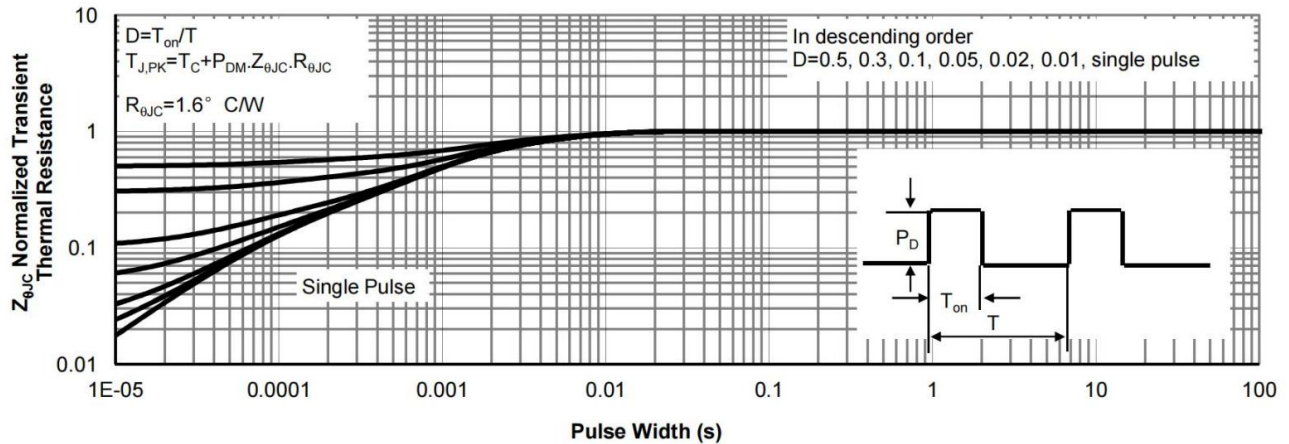
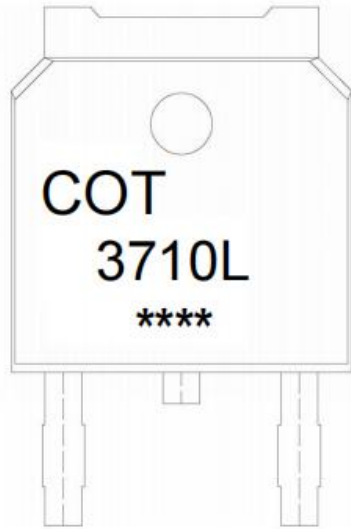


Figure 10: Normalized Maximum Transient Thermal Impedance

Marking Instructions



Note:

COT: Company Logo.

3710L: Product Type.

****: Lot No. Code, code change with Lot No.

Packaging SPEC

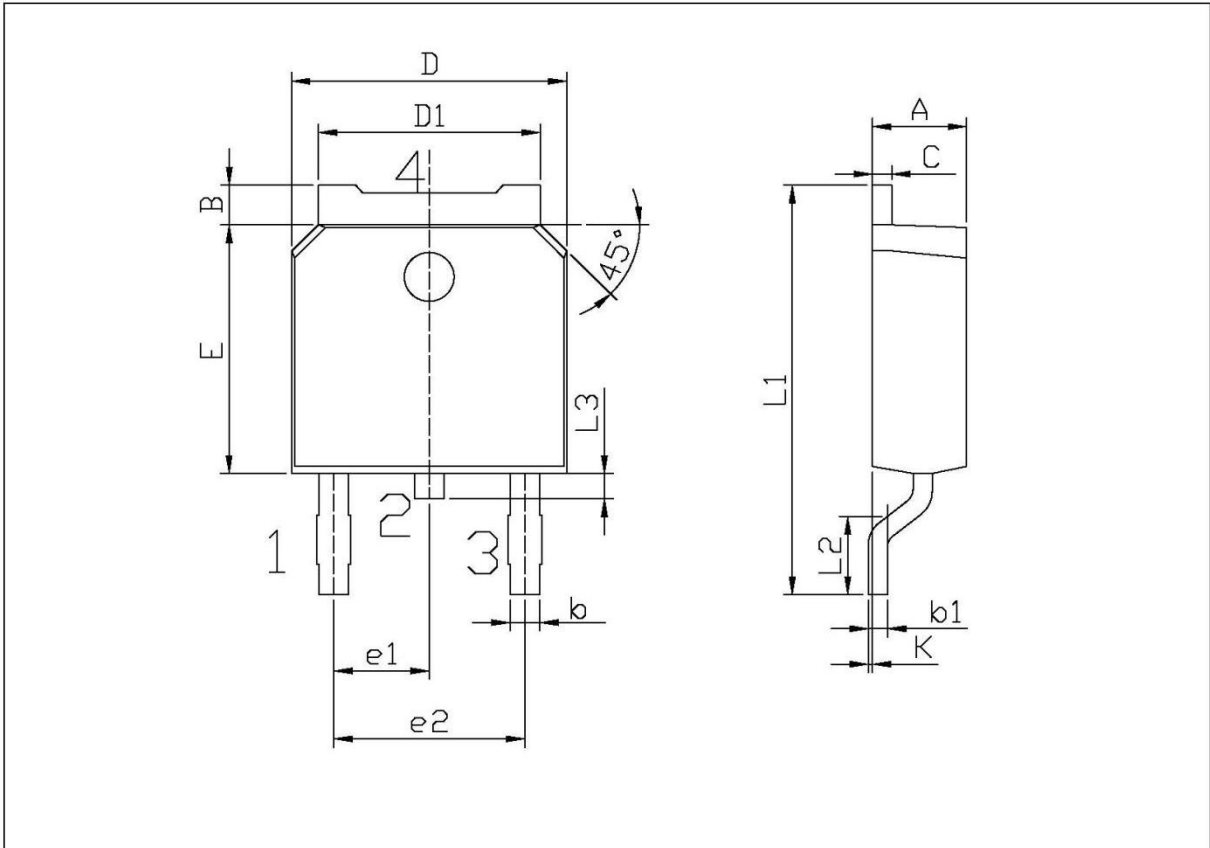
REEL INFORMATION

Package Type	Units					Dimension (unit: mm ³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
TO-252	2,500	2	5,000	6	30,000	13" ×16	360×360×50	380×335×366

TUBE INFORMATION

Package Type	Units					Dimension (unit: mm ³)		
	Units/Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Tube	Inner Box	Outer Box
TO-252	75	48	3,600	5	18,000	526×20.5×5.25	555×164×50	575×290×180

Package Outline Dimensions



单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.70	0.90	e2	4.43	4.73
b1	0.45	0.55	L1	9.85	10.35
C	0.45	0.55	L2	1.70	2.00
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

TO-252